

REMARKS

Claims 1, 3, 5 – 14, and 16 – 26 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejection in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 14, 21 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al (U.S. Pat. No. 6,266,119) in view of Ishikawa et al (U.S. Pat. No. 5,258,866). This rejection is respectfully traversed.

Claim 14 has been amended to call for one of the first and second alignment marks to have an open cross shape and the other of the first and second alignment marks to have a closed cross shape that corresponds to the open cross shape. This subject matter is supported, for example, in Figure 4 of the application. In Figure 4, it can be seen that the alignment marks 10 have an open cross shape, and the alignment marks 15 have a closed cross shape. Further, in Figure 7 for example, it can be seen that the alignment marks 15 with the closed cross shape correspond to the alignment marks 10 with the open cross shape. Neither Takahashi, Ishikawa, nor any combination thereof teaches or suggests such a configuration.

More particularly, referring to Figure 6 of Takahashi, it can be seen that no alignment marks are taught with a closed cross shape that correspond to the open cross shape. At best, Takahashi merely teaches alignment marks that are opposed to each other. There is no teaching, however, of alignment marks with an open cross shape and a closed cross shape, wherein the closed cross shape corresponds to the open cross shape. With respect to Ishikawa, Ishikawa is completely silent with respect to alignment marks. Since this feature of the claimed invention is

neither taught nor suggested by the proposed combination of Takahashi and Ishikawa, the claimed invention would not have been obvious.

Further, on page 5 of the outstanding Office Action, the Examiner alleges that Ishikawa teaches a “spacing of the alignment marks on the mount base member would be necessarily be spaced more apart” due to the different linear thermal expansion coefficients of the substrates. Ishikawa, however, does not teach alignment marks. Alignment of the electrodes is performed using the electrodes themselves. As such, Applicants respectfully assert Ishikawa is completely silent with respect to this aspect of the claimed invention.

Moreover, using the configuration of Ishikawa in a configuration such as Takahashi that has alignment marks would be contrary to the invention of Ishikawa. This is because the main feature of Ishikawa as discussed in the specification is to align the substrates with the centrally located electrodes. As such, the objective of Ishikawa is met by alignment merely aligning the electrodes and not by alignment marks. Since these teachings conflict, it would not have been obvious to combine the teachings of Takahashi and Ishikawa.

Claim 23 has also been amended and rewritten. Claim 23 now calls for a mount base member to be bonded to a substrate of an electro-optical panel, comprising a second expandable terminal bank and a plurality of second alignment marks simultaneously formed with the second expandable terminal bank. The second expandable terminal bank includes a first pitch that is smaller than a first pitch of a first expandable terminal bank formed on the substrate, and a linear thermal expansion coefficient that is larger than a linear thermal expansion coefficient of the substrate.

Claim 23 now also calls for the plurality of second alignment marks to be arranged to be opposed to each other with the second expandable terminal bank interposed therebetween and

arranged at a spacing approximately equal to a spacing of a plurality of first alignment marks formed on the substrate. The plurality of first alignment marks are arranged to be opposed to each other with the first expandable terminal bank interposed therebetween.

Lastly, claim 23 now calls for, after the mount member is aligned with the substrate by aligning the second alignment marks with the first alignment marks and connected to the substrate with thermal compression bonding, the second expandable terminal bank to expand by b times and the first expandable terminal bank to expand by a times according to the linear thermal expansion coefficients of the mount base member and the substrate such that the second expandable terminal bank is directly connectable to the first expandable terminal bank formed on the substrate, the second expandable terminal bank has a second pitch that is substantially equal to a second pitch of the first terminal bank, and the plurality of second alignment marks are spaced mutually more apart than the spacing of the first alignment marks.

This subject matter is described throughout the specification and drawings as originally filed. No new matter has been added. Specifically, this subject matter is described at paragraph [0052] of the specification, where it states that, "Subsequent to the thermal compression bonding of the substrate 6a to the wiring board 11, the bank of the terminals 9 stretches in the transverse direction thereof (the lateral direction in FIGS. 6(a) and 6(b), and FIGS. 7(a) and 7(b)) by a times on the substrate 6a, and the bank of the output terminals 11c stretches in the transverse direction thereof by b times on the wiring board 11."

Neither Takahashi, Ishikawa, nor any combination thereof teaches, suggests, or provides motivation to utilize such a structure. More particularly, both Takahashi and Ishikawa merely teach a dimensional change in only the flexible circuit board. With respect to Takahashi, it is disclosed at column 2, lines 29-39 that:

“For example, when a flexible printed circuit (FPC) board (referred to as “FPC”) is liable to cause a dimensional change of its base film due to, e.g., heat treatment during the production of the FPC, thus resulting in a dimensional error (tolerance) to a dimensional accuracy of an electrode pattern. The dimensional error of the electrode pattern on the PFC [i]s larger than that on the glass substrate and is generally ca. $\pm 0.1\%$. Even when the dimensional error is decreased by finely adjusting a size of a mask used in the electrode pattern formation, the resultant dimensional error is ca. $\pm 0.05\%$.” (emphasis added)

With respect to the above disclosure, Applicants respectfully assert that Takahashi merely teaches only a dimensional change to the FPC and, further, that the dimensional change only occurs during the production of the FPC. That is, Takahashi does not disclose that a dimensional change occurs to the FPC when the FPC is connected to substrate by thermal compression bonding, as claimed, but rather when the FPC is manufactured. Such a dimensional change could occur due to a number of factors, including the disposition of the electrodes onto the FPC. This is further evidenced by the fact that Takahashi teaches the use of a connection electrode 37 to connect the FPC to the substrate. By using a connection electrode 37, there is no teaching or suggestion in Takahashi that a dimensional problem occurs when connecting the FPC to the substrate by thermal compression bonding that requires taking into consideration the expansion of both the first terminal bank of the substrate and the second terminal bank of the mount base member, as claimed. Since there is no teaching or suggestion to take into consideration the expansion of both the substrate and mount base member, it would not have been obvious to modify the teachings of Takahashi with those of Ishikawa.

With respect to Ishikawa, however, Applicants respectfully assert that Ishikawa is also silent with respect to a dimensional change in both the flexible circuit board and the substrate. Specifically, Ishikawa teaches at column 2, lines 34-52 that:

“In order to attain the object, according to the present invention, there is provided a method of connecting a liquid crystal display element and a flexible circuit board to each other by performing a pressurizing and heating step to

electrically and mechanically connect a plurality of electrode terminals formed at an equal pitch along an edge of a glass substrate of the liquid crystal display element to a plurality of lead electrodes formed at an equal pitch along an edge of a base film of the flexible circuit board, wherein, where the terminal pitch of the electrode terminals of the liquid crystal display element is represented by P , the terminal pitch of the lead electrodes before the pressurizing and heating step is represented by p , and the elongation percentage of the base film of the flexible circuit board by the pressurizing and heating step is represented by α , either one of the terminal pitches P and p is set in advance relative to the other such that the relationship of $P=(1+\alpha)p$ may be satisfied.” (emphasis added)

By this disclosure, Ishikawa merely takes into consideration the elongation percentage of the flexible circuit board. There is no teaching or suggestion that the expansion of both the mount base member and substrate are taken into consideration, as claimed, because only the elongation variable α of the flexible circuit board is taken into account. Since neither Takahashi nor Ishikawa teach or suggest taking into consideration the expansion characteristics of both the first terminal bank and the second terminal bank formed on the substrate and mount base member, respectively, the claimed invention would not have been obvious.

Lastly, as stated in responses to previous Office Actions, Applicants respectfully assert that MPEP 2143 mandates that in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

Applicant respectfully asserts that Takahashi contains no suggestion or motivation to modify its teachings with those of Ishikawa. The claimed invention calls for the first terminal bank to be directly connected to the second terminal bank. Takahashi, however, teaches the use

of a connection electrode 37 to connect its terminal banks. In view of this teaching of a connection electrode, Takahashi does not suggest or provide motivation to one skilled in the art to look to Ishikawa for a teaching of a flexible circuit board with a pitch $p=P/(1+\alpha)$. Since there is no suggestion or motivation to look to Ishikawa, the proposed modification of Takahashi with the teachings of Ishikawa is improper and, therefore, not obvious.

Moreover, Applicant respectfully asserts that the combination of references does not teach or suggest all the claim limitations. That is, the claimed invention calls for the plurality of second alignment marks to be spaced mutually more apart than the spacing of the first alignment marks after thermal bonding. Neither Takahashi nor Ishikawa teach such a limitation. That is, Ishikawa is completely silent with respect to alignment marks and Takahashi merely teaches the use of alignment marks. There is no suggestion, however, that the second alignment marks are to be spaced mutually more apart than the spacing of the first alignment marks, as claimed. As such, Applicant respectfully asserts that the Examiner has not established a prima facie case of obviousness and respectfully requests that the rejection under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

NEW CLAIM

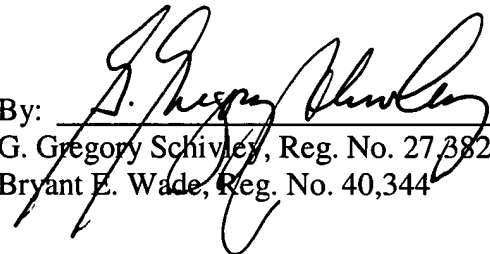
New claim 26 has been added. This subject matter was previously found in claim 15 of the application, which has since been cancelled. Favorable consideration of this new claim is respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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